22 January 2007

Federal Communications Commission
(WT Docket No. 03-187)
445 12th St, SW.
Washington, DC 20554

Comments Referencing WT Docket No. 03-187; Effect of Communications Towers on Migratory Birds:

This letter provides comments on the Federal Communications Commission (FCC) proposed rules as outlined in WT Docket No. 03-187. I support and strongly encourage the FCC to use medium intensity white strobe lights for nighttime conspicuity as the preferred system for lighting of communication towers to minimize effects on migratory birds.

Red Lights

Birds are attracted to red obstruction lighting systems on communication towers, especially those above 500 ft tall, thus having a strong negative impact killing millions of birds annually (Cochran and Graber 1958, Avery et al. 1976, Crawford and Engstrom 1999, also see Weir 1977, Avery et al. 1980, Herbert et al. 1995, Trapp 1998, and Kerlinger 2000 for complete literature reviews). This phenomenon primarily occurs east of the Rocky Mountains from the Great Plains, eastward to the East Coast and southward to the Gulf Coast. In Kansas, two red-lit towers in the Topeka vicinity have killed thousands of birds since the 1950's with hundred's of birds killed in one evening (Tordoff and Mengel 1956, Robbins et al. 2000, Young and Robbins 2001a, Kluza et al. 2001, Young and Robbins unpubl. data). However, a non-red lit tower in excess of 1000 ft in south-central Kansas has failed to produce a single large tower-kill event, and relatively few birds killed during studies in the 1990's (Young et al. 1995, Young unpubl. data). To my knowledge, substantial avian mortality has only been recorded at red-lit towers in Kansas.

ESA, NEPA, and MBTA

The FCC has an obligation under the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA) to require an Environmental Assessment (EA) since migratory bird populations may be negatively affected by lighting systems. While it may not be economically feasible to require an EA for construction of "all" new towers, the only mechanism to ensure that a new tower is

not a problem may come from the development of models to be used as part of the NEPA analysis. Therefore, I would encourage the FCC to work with the United States Fish and Wildlife Service (USFWS) to develop modeling criteria that could be used to ascertain if a potential tower site is appropriately sited. To date, I'm unaware of any examination of communication towers in relationship to habitats, or landscape scale analysis, that attempts to use GIS to ascertain the potential for avian collisions with communication towers. Meta analysis of landscape scale habitats as it relates to known "problem" towers and known "non-problem" towers could be used to develop potential models that may identify potential conflicts for new proposed towers. Habitat parameters from 1, 2, 5, 10, and 20 mi (such as wetland, woodland, upland prairie, urbanization), along with topography, migration data, etc., could be incorporated into such modeling. If such modeling proves useful, new sites may not require an EA but a model meta-analysis that indicates potential risk for collision at several may be sufficient to indicate minimal risks.

While arguments exist that the FCC may have responsibility under the Migratory Bird Treaty Act (MBTA), the FCC doesn't own the tower…and therefore it seem reasonable to expect the individual(s) that own the tower are ultimately responsible for complying with the MBTA. I see this along the lines of the automobile makers…if a vehicle strikes a bird while being driven the individual could be considered in violation of the MBTA, not the automobile maker. However, I do not believe this is the case when examining issues where the government owns the land and the tower…during such circumstances the government would have a responsibility under the MBTA.

However, the FCC as a federal permitting agency is responsible for (in part), ascertaining 1) where the tower may be sited, 2) recommending what type of lighting is required, along with the Federal Aviation Administration (FAA), and 3) the type of tower constructed, therefore the FCC (and even FAA) is obligated under ESA and NEPA to protect "listed" or migratory birds. But once a tower is constructed, it becomes the owner's responsibility under the MBTA to reduce risks.

Kansas Data on Avian Collisions with Communications Towers

From the late 1990's through the early 2000's, studies of towers in Kansas suggest that 22,000 – 93,500 birds are killed annually at towers over 500 ft tall while towers under 500 ft tall kill few birds (Young and Obrien 1994, Young et al. 1995, Lundy and Young 2000, Young et al. 2000, Young unpubl. data). These were conservative estimates based on data obtained from tower studies in spring and fall, on red lit and non-red lit towers, and the lack of any "large kill" event, in other words based on daily estimated mortality events. It was also based on the number of known towers in Kansas as indicated by towerkill.com in 1998 (32 above 800 ft, and 60 from 500-799 ft), which has increased in the last seven years (based on FAA maps).

It must be noted, that not all towers kill "large" numbers of birds, but certain towers may kill hundreds to thousands of birds in one evening, therefore, the estimates in one year could be on the low end, and the following substantially higher. For example: four towers in south-central Kansas with different heights, lighting regimes, habitats, and number of guy wires, were estimated to kill between 800-2000 birds/year (Young et al. 1994, Young et al. 1995). Near Topeka, two towers have been implicated in several large kill events. Tordoff and Mengel (1956) studied a 1010 ft tall with red flashing lights and 15 guy wires. Ball et al. (1995), Kluza et al. (2001), Robbins et al. (2000), and Young and Robbins (2001a, 2001b) studied a 1396 ft tower in Topeka with red flashing lights and 27 guy wires that had large kill events in 1985, 1986 (2), 1994, 1999, and 2000. Young and Robbins (2001b) determined that 4,887 individuals of 97 species were killed during studies at these two towers since the 1950's. Seven large kills accounted for 98% of all mortality with 80% of the species being Neotropical migrants. During two spring studies at the latter tower only 14 species and 22 individuals were found. Overall, the number of species killed and number of individuals recorded during these "large kill events" has been decreasing since the 1950's, but whether this is due to the overall decrease in avian populations thus fewer individuals are killed; if it's a due to habituation to towers so fewer individuals are killed; a change in habitats or land use (small scale or large scale) around the tower; or a result of change in migratory pathways is unknown.

Thus, the best scientific evidence from Kansas indicates communication towers kill birds, but not all towers kill significant numbers of birds. Therefore when considering the number of birds towers kill it becomes readily apparent that we must consider the cumulative impacts of all towers. Therefore, when examining the USFWS estimates of 4 million to 50 million birds killed annually in the US, it is plausible that the 4 million occurs in years when large kills are not reported, but 50 million could occur during years when larger kills are documented. While several years of mortality at the low end may not have biological significance at the population level, several years at the high end could adversely effect populations and be biologically significant, especially for species that may already show population declines.

It should be noted, based on studies in Kansas few birds are killed at towers under 500 ft tall, however, the largest single mortality event indicated in the literature comes from the "Lapland Longspur" kill in Syracuse, Kansas in the 1990's. While it has been commonly portrayed as a "tower kill" event, it would best be described as an anomaly and more accurately as a "winter storm/tower kill" event with an emphasis on the "winter storm." We are currently working on data from the event, including specimen data, and anticipate publication in the next year. While three towers were involved with this event, all less than 500 ft, other facilities and structures were present with lighting not associated with the towers. Birds appeared to be attracted to the area as a result of lighting, both structural lighting

associated with natural gas generating facility, security lighting, and of course the towers, but this was likely amplified as a result of white-out conditions during blizzard conditions. While it is true that birds were killed at the towers, they were also killed by chain-link fences, power lines, and by simply striking the ground (several birds were impaled on crop residue, i.e. stalks). Furthermore, the estimate of 10,000-20,000 Lapland Longspurs, while still a valid estimate (a few McCown's and Chestnut-collared longspurs were also found, as were Dark-eyed Junco's and House Sparrow), is more typical of the winter storm events that frequently kill longspurs as has been reported in the general literature. Thus, caution should be made when using this event as an argument "for" or "against" any communication tower regulations whether dealing with lighting, height, etc.

I am not aware of any federal listed species being killed at a communication tower in Kansas. However, a few species that are considered "conservation concern" species (by various conservation groups, State agencies, and/or the USFWS) have been killed and they include: Least Bittern; Yellow Rail; Baird's Sparrow; Bell's Vireo; Bobolink; and Dickcissel.

Guy Wires

Young (1993) conducted a fall study of a LORAN-C tower in the panhandle of Oklahoma and concluded an estimated total collision between 226-375 individuals during one fall season with no large kills reported. However, this tower did contain an unusual large number of guy wires for its size since some of the wires are part of the antenna field and are not actually structural support wires. This tower was lit during the day by white-strobes and the evening by red. The larger estimated number of collisions with this tower than some of the aforementioned taller Kansas towers could be a result of the greater number of guy wires, or it could also be a reflection of the habitat, short-grass prairie, making it easy to find dead birds. Therefore, bias estimates were minimal. However, it does raise the question; do such towers kill more birds? Additional studies of LORAN-C towers and other "normal" nearby communication towers could be studied simultaneously to ascertain the direct affect of the number of guy wires.

The number of guy wires may be irrelevant if lighting regimes change, since lights attract the birds, which fly around the tower and increase the risk of collision with the wires. Therefore, elimination of the red lighting systems would diminish the need to address the guy wire issue. Furthermore, it would also reduce the requirement for guy wire marking to reduce collisions.

While I'm unaware of any studies conducted on wire marking on communication towers guy wires, during several hours (spring and fall, ca. 50+ total hrs) of diurnal observations at towers (since the 1990's) by both students and myself, we have never observed a bird colliding with guy wires (Young 1993, Young and Obrien 1994, Young et al. 1995, Young et al. 2000, Young 2004, 2005, Young et al. 2006, Young unpubl. data). Thus, the use of guy wire markers for daytime collisions is not needed. The extent to which such marking systems could diminish nocturnal collisions is unknown and untested. Anecdotal evidence indicates that birds become habituated to the wires and use them as perching sites during the day.

Tower Height

Tower height seems to be an issue with current lighting conditions, but this may be an artifact of the lighting system. Elimination of the red lighting systems may reduce the need to reduce the size of towers. With current lighting systems, towers less than 500 ft tall appear to kill fewer birds than larger towers and non-lit meteorological towers kill even fewer, at least in Kansas (Lundy and Young 2000, Young et al. 2000, Young 2004, 2005, Young et al. 2006, Young unpubl. data). Thus, while it appears that tower height has an affect, the changing of lighting regimes may be the more critical factor than the actual tower height.

Location of Habitats and Tower Siting

Communication towers should be the farthest maximum distance possible from natural habitats that attract species that tend to concentrate in large numbers such as wetlands, native grasslands, and woodlands. Meta-analysis should be completed to address how far these distances need to be (see discussion under ESA, NEPA, and MBTA section above).

I fully support the collocation concept for communication towers. It would not only reduce the need for the number of towers, but it could also reduce habitat loss, thus further decreasing potential impacts on birds. Tall structures in grasslands may interfere with grassland species breeding patterns…and the placement of a single tower within such habitats may have a much larger "environmental footprint" than the couple of acres the base of the tower occupies.

Recommendations

An EA should be required if a new tower "may have an affect" on the environment due to impacts on migratory birds. All new skeletal framed guy wire supported towers planned greater than 500 ft tall should require an EA if they are going to have red-lights because they "may have an affect" on avian species. Towers that are not supported by guy wires and towers that are not going to be lit by red lights should be required to complete the NEPA process to determine if an EA would be

required. All towers under 500 ft tall, regardless of lighting scheme, should complete the NEPA process to determine if an EA would be required. The best scientific evidence from Kansas and the rest of the US seems to support the need for an EA for towers that will have red lights and are 500 ft or greater.

Existing towers need to be monitored to better ascertain the extent of mortality. Such data could be used to develop additional rules that may be more restrictive or less restrictive than what will ultimately come from the current examination of scientific data in this Public Notice. Furthermore, this data can be used to develop better meta-analysis, which may be helpful in determining the extent of EA requirements.

If you have any questions, please feel free to contact me using either of the contacts below.

Sincerely,

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